



The View from Operations

RHIC RETREAT 2018

First some Good News...

- No catastrophes this year:
 - No broken diodes, cryo breakers, or booster electrical feeds.
- LINAC LLRF upgrades have been close to perfect.
- Mode switching for Ru/Zr/Au was very smooth.
- Fewer desperate calls to AI in the middle of the night.
- Most telling: very few people had gripes when I went asking.

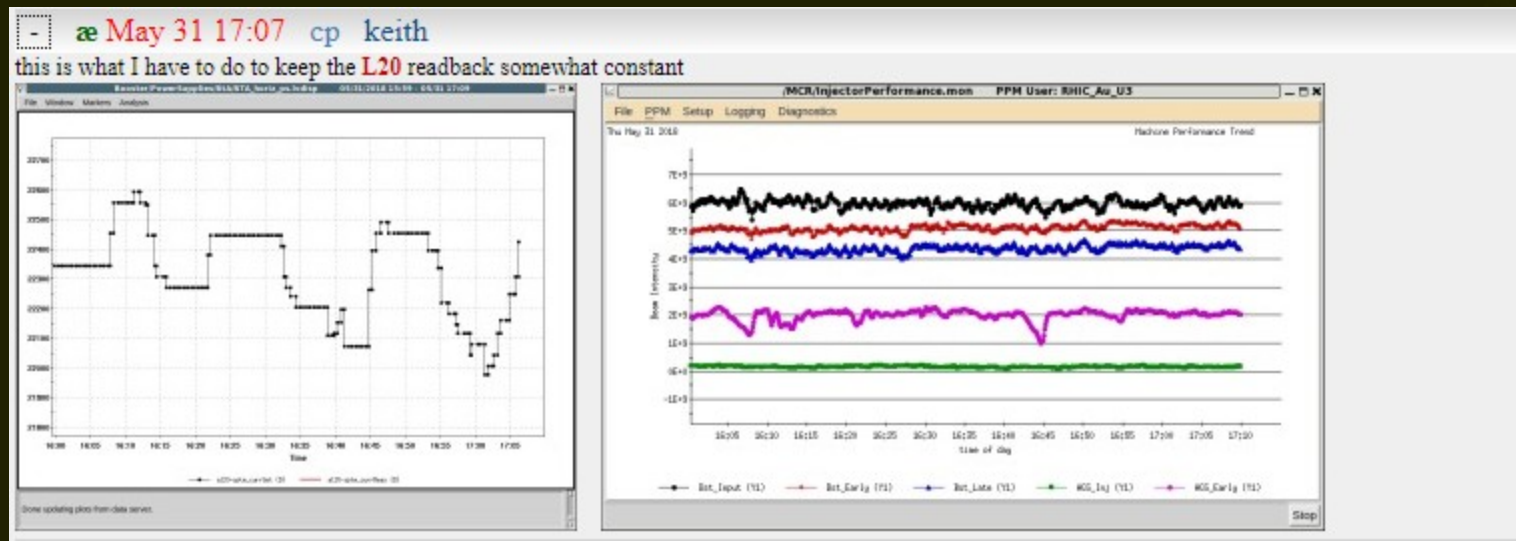
Leading to our biggest complaint...

Pulsed Power

- Every single person in Operations I asked brought this up.
- Reliability and time to resolution were both issues.
- H10's setup was changed over the summer for both charging and calibration. The only way to find the right settings was a long tedious scan of the beam where any wrong shot pulled the AGS permit.
- H10 also took to lurching by hundreds of counts in output. A normal tuning nudge is ~5 counts. We would need to change it by 100s. You can find comments in the logs on: 3/21, 4/5, 4/18, 4/25, 5/20, 5/23, 5/25, 5/30, 6/4 and 6/7.

Pulsed Power Part 2

- L20 did not work normally during checkout, then drifted throughout most of the run. Operators and Specialists had to act as human servos just to keep the beam running.



Pulsed Power Part 3

- A₅ also drifted. G₁₀ had issues with its DG₅₃₅ module and GPIB.
- The tolerances for this equipment are very tight, per the RHIC TDR:

	Beta (m)	Angle (mrad)	Tolerance (% max)
AGS G-10 Kicker	15	2	0.9
AGS H-10 Septum	15	22	0.09
AGS Orbit Bumps	22	2	0.8
Switch (X-Y)	54	48	0.02
RHIC Kicker	31	1.9	0.7

- Arlene, Wisman, Yugang, Jianlin, and Pulsed Power personnel have been responsive to our calls, although issues persist. Additionally they were saddled with the task of re-engineering the delayed abort system. Do we have sufficient resources available for them to succeed?

Scheduling/Experimenter requests: A Mixed Bag

- Bill's weekly emails help keep the ship sailing smoothly.
- Experienced Run Coordinators make a big difference.
- We "struggled" to get accurate species lists from NSRL in a timely manner. Last-minute changes were common.
- STAR crying "We need double the integrated luminosity!" near the end of the medium energy run was unexpected.
- All shift crews (not just MCR) seem to suffer from late-notice changes. For example, CAS's switch to single-staffing or MCR's summer plans.

Smoke Detectors and OPM Madness

- The OPMs allow us some leeway when safety equipment breaks. Those are called “Authorized Alternatives.” A typical example is one for smoke detectors:
5.3.1.3.3 For Booster, AGS, ATR and RHIC - conduct 2-hour tours of the enclosed areas by visually inspecting through gates that allow inspection and by smelling for smoke.
- This run we had extended failures for smoke detection in RHIC sectors 8 and 12.
- (By extended, I mean **months**. This was entirely the responsibility of Fire Rescue and their technicians.)

Smoke Detectors and OPM Madness (Part 2)

- The gate at sector 12:
- The door behind the gate at sector 12:
- The corridor behind the door behind the gate at sector 12:



Smoke Detectors and OPM Madness (Part 3)

- Because this ran so long and stopped CAS being able to do useful things, we got a workaround. Check the gate monitors in MCR:



- Perhaps it's time for us to review our OPMs. Is this really how we want to do business?

Alarms

- With smoke detectors down, the quickest way we would find out about a fire in this case would be from equipment failure. Which we would see on the alarm display.

CAD AD2000 - Wed Jul 11 18:38:43 2018

Setup Filter Mask Logs Transfer Diagnostics Help

3 Critical Alarms Unfiltered View Last Received @ Wed Jul 11 15:19:44 2018

ID	Alarm	Description	State	Time
4	prs-910-6-913-Q-A-18_House.dicomM	Building High Temperature	seen	Jul 10 15:14
4	prs-912-6-913-Q-C-18_House.dicomM	Building High Temperature	seen	Jul 11 10:47
5	prs-974-6-914-942-913.dicomM	Booster P.R. (914 Bamt)-M.M.-C	seen	Jul 11 15:19

62 Standard Alarms Unfiltered View Last Received @ Wed Jul 11 18:34:29 2018

ID	Alarm	Description	State	Time
1	toshiba-acn10ups1-upsNotAnsweringM	NOT ANSWERING	new	Jul 10 15:24
1	util1-al8-ps1-centigradeM	range error	new	Jul 10 15:40
1	h11-cool-slit-mot-motionStatusM	stalled	new	Jul 10 16:19
1	ampmotion-er1.rf.tune-motionStatusM	comm fail	new	Jul 10 16:45
1	ebs-sv-04-picValveGetFeedbackBitM	Vacuum Valve Closed	new	Jul 10 18:47
1	ebs-sv-01-picValveGetFeedbackBitM	Vacuum Valve Closed	new	Jul 10 18:47
1	es-sv-01-picValveGetFeedbackBitM	Vacuum Valve Closed	new	Jul 10 18:47
1	yo8-tc-p114.2:pressureM	Insulating Vac Warning	new	Jul 10 19:59
1	b6-03:pressureM	Insulating Vac Warning	new	Jul 10 21:34
1	y5-03:pressureM	Insulating Vac Warning	new	Jul 11 00:54
1	y5-01:pressureM	Insulating Vac Warning	new	Jul 11 00:54
1	CAD_Weather_Alert	FLOOD WARNING	new	Jul 11 03:43
1	temperature-d18house:dataM	range error	new	Jul 11 07:52
1	b6-04:pressureM	Insulating Vac Warning	new	Jul 11 09:40
1	zabermotionX.lion:motionStatusM	stalled	new	Jul 11 09:43
1	prs-938-0-A-10_House.dicomM	UPS Trouble-A-10 House	new	Jul 11 10:55
1	919-1H:grndFaultM	Ground fault indicator	new	Jul 11 11:02
1	y4-05:pressureM	Insulating Vac Warning	new	Jul 11 12:20
1	y3-01:pressureM	Insulating Vac Warning	new	Jul 11 13:34
1	y3-03:pressureM	Insulating Vac Warning	new	Jul 11 13:35
2	WAT-h11-cool-d1-ps-1PsiDACI	18sec 180 bend not at setpoint	new	Jul 11 13:38
1	y3-09:pressureM	Insulating Vac Warning	new	Jul 11 13:58
1	y3-05:pressureM	Insulating Vac Warning	new	Jul 11 13:58
1	y4-03:pressureM	Insulating Vac Warning	new	Jul 11 14:50
1	y4-01:pressureM	Insulating Vac Warning	new	Jul 11 14:50
1	qfgWatch-ebs-es11.1-ps:alarmM	not following function	8 new	Jul 11 15:16
1	temperature-10a-watchAlarmM	range error	new	Jul 11 15:26
1	gd-ups1008b-pbn.bnl.gov-upsNotAnswr	UPS FAULT	new	Jul 11 15:54
1	dmmCntrl1.12a.A.comStatusM	range error	new	Jul 11 16:10
1	y4-08:pressureM	Insulating Vac Warning	new	Jul 11 16:46
1	es1-sv-01-picValveGetFeedbackBitM	Vacuum Valve Closed	new	Jul 11 16:49
2	cec-las-shutter-mps.sts.inBitsAlarm	Not Open	new	Jul 11 17:28
1	cs2-gun-sv-picValveGetFeedbackBitM	Vacuum Valve Closed	new	Jul 11 17:29
1	dmmCntrl1.8b.A.comStatusM	range error	new	Jul 11 17:31
1	dmmCntrl1.4b.A.comStatusM	range error	new	Jul 11 17:42
3	WAT-cs2-gun-cav-f10:valveM	Over 7	new	Jul 11 18:27
1	dmmCntrl1.10a.A.comStatusM	range error	new	Jul 11 18:28
1	dmmCntrl1.2b.A.comStatusM	range error	new	Jul 11 18:34

1316 Deferred/Orphaned Alarms (0 Critical) Unfiltered View Last Received @ Tue Jul 10 11:34:04 2018

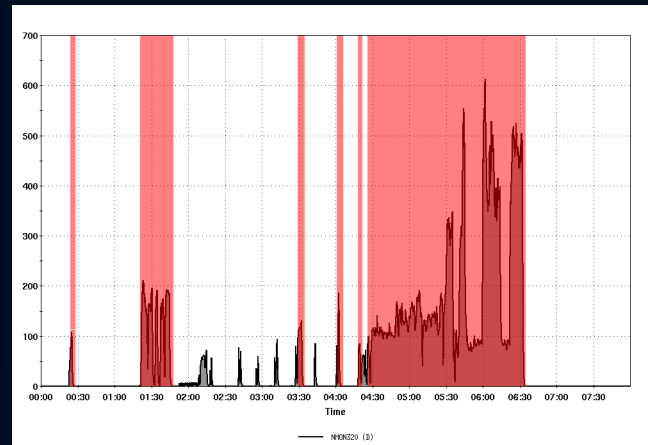
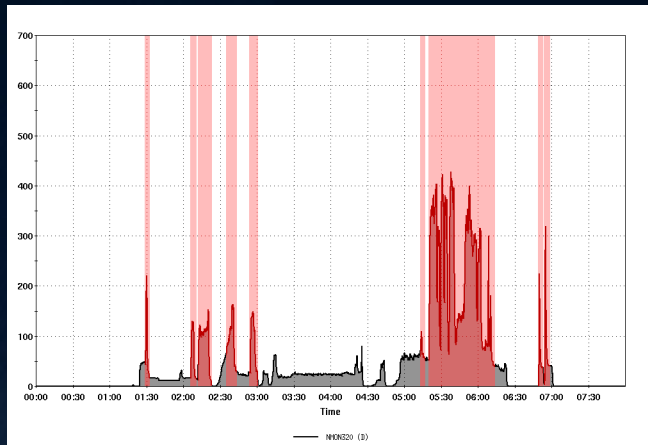
ID	Alarm	Description	State	Time
2	permit.931-vme.A.input5StatusM	BLIP Process Controls:Permit 1	deferred	Jul 10 10:13
1	permit.931-vme.A.upstreamFailedM	permit 931-vme.A (Master) : Pe	deferred	Jul 10 10:13
1	g6-to-pmx:pressureM	Insulating Vac Warning	deferred	Jul 10 11:34

The global MCR Filter /operations/app_store/AlarmDisplay2000/filters/CAD/mcrdefault3 loaded (Jul 11 18:38:21)

- Except we are still suffering with “fields of green.”
- There is a real (hidden) price being paid for these alarms. Every useless alarm hinders our ability to find the real ones.
- MCR and Controls are working on this.
- You can help too!

Working with the New Guys: CeC & LEReC

- CeC had rough start with us: morning shifts on March 6th and 7th:



- The red areas are persistent chipmunk alarms for NM320.
- Once they were given clear direction by those with more operations experience, they became very conscientious.

Working with the New Guys: CeC & LEReC

- Communication remained an occasional problem throughout the run. “I didn’t think those quads would do that” was a common refrain. That and “Operations didn’t complain,” (Operations didn’t know).
- MCR can offer a lot to these projects. We can do grunt work, take scans, troubleshoot, build monitors, mine for data, advise on best practices...
- CeC scratched the surface with us during the run.
- LEReC only really started to leverage our capabilities after the run ended.
- We want to help any way we can. **Help us help you.**

Looking forwards

- BES II is coming up.
 - We have shown that we (C-AD) can do it. But:
 - Shorter stores mean more stress on MCR. We need full crews.
 - Pulsed power becomes critical more frequently for filling.
- Good communication helps us all. When things get complicated, it becomes critical.
- We still have single-point failure people: e.g. Loralie, Zeynep, and Al.
- Grumbles aside, we had great support this year. Thank you all.